C-A OPERATIONS PROCEDURES MANUAL

8.1.12 LINAC Shutdown

Text Pages 1 through 3

Hand Processed Changes

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8.1.12 Linac Shutdown

1. Purpose:

To provide instructions to linac staff on how to shut down the linac. This procedure should be followed at the end of a linac running period.

2. Responsibilities:

2.1 The linac staff is responsible for the execution of this procedure.

2.2 The head of Accelerator Operations for the Accelerator Division is responsible for informing the linac staff on when to begin shutdown of the linac.

3. Prerequisites:

Trained and qualified linac staff.

4. Precautions:

None

5. Procedures:

5.1 The Head of Accelerator Operations shall have officially requested that the linac be shut down.

5.2 Inform all linac experimenters (AGS, BLIP, REF) that the linac will be shutting down.

5.3 Close the Tank 1 beam stop, 0-9 beam stop, and High Energy (tank 9) beam stop. The switches are located in LCR rack F2.

5.4 From the vacuum control rack in the Pit 1 area, close the vacuum valve at the entrance to the RFQ.

5.5 Turn off all quadrupoles and dipoles from the Linac Control Room (LCR):
a. Turn off all tank quadrupoles (LCR rack F7).
b. Turn off the HEBT quads, BLIP quads, and LEBT quads (rack F7).
c. Turn off bending magnets 1 & 2 and 4 & 5 (rack F7).

5.6 Turn off each tank rf system from its Local Control Station (LCS):
a. In the 60 kV SCR Controller bucket, push and hold in the reset button. While holding in the button, first set the Local/Remote switch to Local. Continue holding the reset in until the HV is at zero, then push the "Rectifier Off" button while releasing the reset.
b. Turn off pulsing, in the Pulsing Turn-on bucket.
c. Turn off the driver HV, in the Master HV bucket.
d. Turn off the driver filament, "Driver ac", in the Master Filament bucket.

e. Turn off the Modulator filament in the Master Filament bucket.
f. Turn off the 7835 filament in the Master Filament bucket.
g. Shut off the oscilloscope.

5.7 Turn off the RFQ at its LCS:
a. Turn off pulsing.
b. Turn off rf Drive.
c. Push the "Test Fire" button in the HV Crowbar bucket, and then turn off the high voltage (Driver HV Logic").
d. Turn off the filament power ("Driver ac Logic").
e. Shut off the oscilloscope.

5.8 Turn off each of the three bunchers from its LCS:
a. Turn off the High Voltage.
b. Turn off the filament power ("ac Turn-on").
c. Shut off the oscilloscope.

5.9 In the Pit 1 area, turn off the two solenoids supplies by switching off the two main charging supplies from the LEBT Solenoid Turn-on panel. Wait 30 seconds for the capacitor banks to pulse down, and then switch the cap bank switches to discharge. Turn off the Pulser Power Block 60 Vdc supplies, and then turn off the ac switches on the Power Block chassis.

5.10 In the Pit 1 area, turn off the 35 and 750 keV steerers from the LEBT Steering Turn-on panel.

5.11 In the LEBT area, turn off the 750 keV beam chopper supply.

5.12 If the shutdown is at the end of a running period, the tank 1 rf HV power supply should be locked off. Shut off power at the 60 kV power supply breaker, located in the lower equipment bay, behind the air handler between the Mod 3 and Mod 4 quad pulsers (breaker labeled FDS Rec. Pl. Xfmr. No.1). Lock off the breaker, remove the Kirk key, and place a red Lock-out tag on the breaker (the tag should be obtained from MCR, since they have a special log for radiation safety red tags). Place the key in the lock in the security panel by the tank 1 gate. Log this lockout of the tank 1 rf on the "Linac Radiation Security System Check-off List" in the Main Control Room.

5.13 If the shutdown is at the end of a running period, the HEBT BM1 and BM2 power supplies must be locked off. Lockout and red tag these supplies (the red tag should be obtained from MCR, coming from their radiation safety related red tags). Log this lockout on the "BLIP Radiation Security Check-off List" in the Main Control Room.

5.14 Notify the AGS Mechanical Services Group Head that the Linac has been shut down, so that water systems can be shut down.

5.15 Consult with the Linac Operations Coordinator to determine if theion source should be shut down. If the ion source is to be shut down, do the following:

a. Lower the extractor voltage to zero using the voltage control on the Glassman HV power supply. Wait 1 minute, and then turn off the Glassman supply. Turn off the main circuit breaker on the extractor supply rack.

b. Open the source cage door, and apply the ground stick to the HV equipment rack. Turn off the four heater power supplies. Turn off the discharge power supply and arc pulser. Turn off the gas valve pulser supply.

c. Close the hydrogen bottle, located under the source vacuum chamber.

6. Documentation:

Completion of linac shutdown should be entered in the Linac Operations log book.

7. References:

None

8. Attachments:

None.